

# Anything left for animal disease insurance? A choice experiment approach

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# Background

- Animal diseases are costly for producers and society
- Animal disease damages
  - borne by the producers, and in some cases co-financed by the public sector
  - co-finance is limited to diseases which are highly contagious or have serious impacts
  - some member states have active compensation schemes for animal diseases
- Animal disease and insurances in Finland
  - Currently mainly group insurances (e.g salmonella)
  - Good animal disease situation
  - Producers respond to both disease risk and incentives provided by the state
  - Incentives to act in the interest of the society
- Emphasis on prevention
  - biosecurity measures vs. costly animal diseases
  - more demand for animal disease insurance?

## Study:

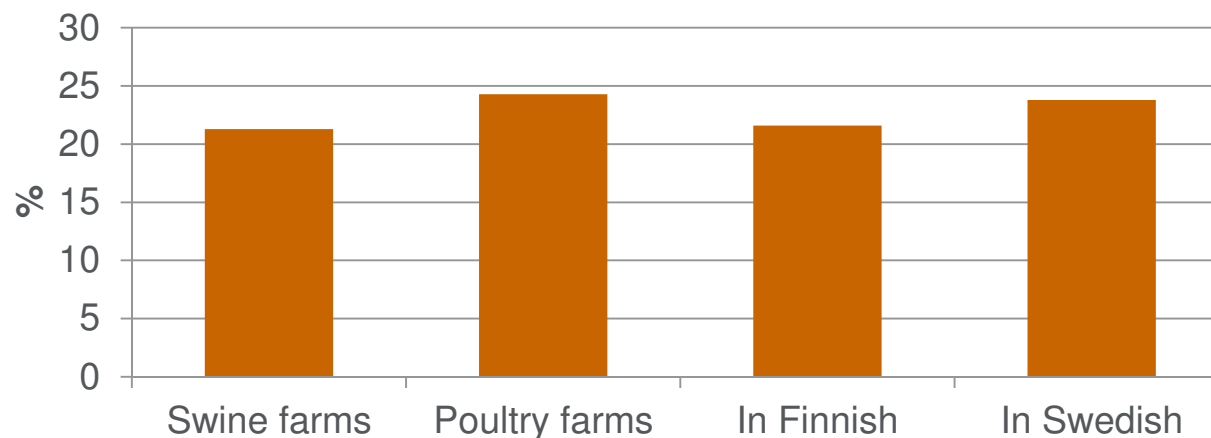
- How much demand there is for animal disease insurance?
- What are the preferred characteristics of insurance and what is producers' WTP for them?
- Are there specific characteristics of the farms that can be used to explain their WTP for animal disease insurance?

# Questionnaire for producers about the interest in animal insurances

- Questionnaire

- August-September 2011
- 1746 swine farms, 607 poultry farms, 24 mixed farms ( $N=2377$ )
- 523 responses, response rate 21,9
- Additionally about 30 empty forms returned

Questions about disease history, handling of the disease situation, uptake and views on insurance and biosecurity, etc...



# Choice experiment

- Choice experiment (CE)
  - A product is a collection of attributes (house, car, insurance)
  - Revealing the demand and WTP for products that do not (yet) exist
- Choice situation
  - Two different products, with varying product characteristics (attributes)
  - "I would not buy either" choice
- Product characteristics
  - Insurance provider
  - Biosecurity requirement
  - Coverage of the insurance
  - Deductible
  - Price

## Different versions

- Each respondent was faced with 4 choice situations
- 32 different versions of the choice situations, in 8 different forms
- Sets generated by Ngene software

## Example of the choice situation

|  | Alternative 1  | Alternative 2  |
|--|--|--|
| Provider of insurance                      | Private insurance company  | Producers' mutual fund   |
| Biosecurity requirement                    | Additional requirements  | National basic requirements  |
| Compensated damages                        | Material damages and animals, as well as income protection             | Material damages and animals, income protection and price protection     |
| Deductible                                 | 0%   | 30%  |
| Price<br>(euro / 100 animal places / year) | Finishing farm: 4,00e<br>Farrowing or farrowing-to-finish farm: 13,20e | Finishing farm: 48,00e<br>Farrowing or farrowing-to-finish farm: 158,00e |
| I would buy this product                   |  |  |
| I would not buy either product             |  |  |

## Attribute levels

| Attribute                              | Levels  |
|--|---|
| Provider of the insurance              | 0 = Private insurance company<br>1 = Producers' mutual fund   |
| Biosecurity requirement                | 0 = National basic requirements<br>1 = Additional requirements  |
| Compensated damages                    | 1 = Material damages and animals<br>2 = Material damages and animals, and income protection<br>3 = Material damages and animals, income protection and price protection |
| Deductible, % of damage                | 30%; 20%; 10%; 5%; 0%   |
| Price, euro / 100 animal places / year | 2; 4; 8; 20; 32; 40; 48; 60; 80; 120  |

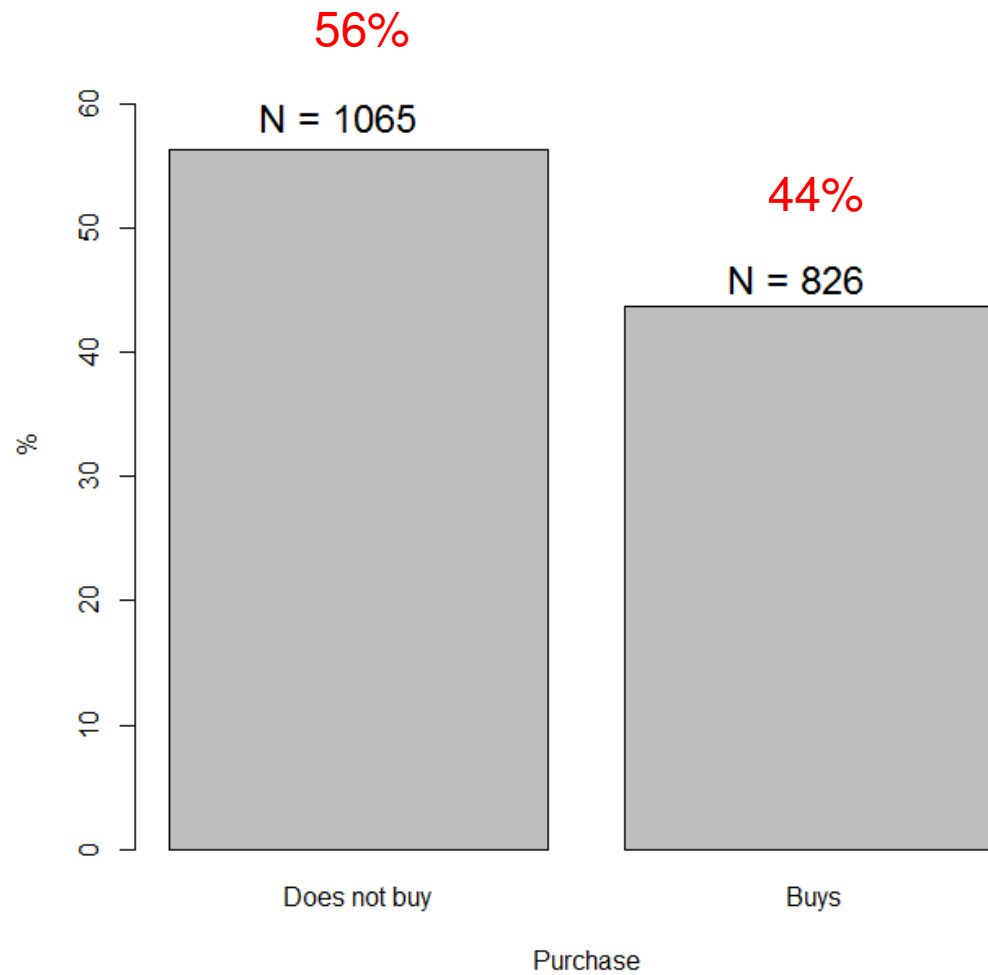
- Price varied between 0,01%-0,30% of the animal place value

# Responses

- 559 responses in total were received
  - 454 answered all four choice situations
  - of these, 125 answered "I would not choose either product" to all four choice situations
  - 65 respondents did not answer any of the four choice situations
- Responses were received in total for 1891 choice situations



## Did they choose any product?



## Regression, dependent variable: Product chosen or not

|                               | All diseases  |       |         |
|-------------------------------|---------------|-------|---------|
|                               | Estimate      | s.e.  | p value |
| Price (finishing pig)         | <b>-0.513</b> | 0.174 | 0.003   |
| Price (other pigs)            | <b>-0.157</b> | 0.046 | <0.001  |
| Price(poultry)                | <b>-5.594</b> | 2.207 | 0.011   |
| Insurance company as provider | 0.104         | 0.076 | 0.170   |
| Biosecurity requirement       | -0.096        | 0.084 | 0.250   |
| Compensated damages, low      | <b>-4.060</b> | 0.417 | <0.001  |
| Compensated damages, medium   | <b>-3.508</b> | 0.368 | <0.001  |
| Compensated damages, high     | <b>-3.384</b> | 0.357 | <0.001  |
| Deductible                    | <b>-0.033</b> | 0.004 | <0.001  |
| R <sup>2</sup>                | 0.026         |       |         |
| R(0) <sup>2</sup>             | 0.141         |       |         |

## Latent class

- 4 different "buyer" classes:
- *Class 1: 47 % "Non-buyers"*
  - Compensated damages and deductible strong negative effect
- *Class 2: 19 %, "Strong buyers"*.
  - Would buy in most cases, demand more dependent on deductible than price
- *Class 3: 17 %, "Weak buyers"*.
  - Added biosecurity requirements decrease the demand,
- *Class 4: 16 %, "Concerned non-buyers"*.
  - Many have had animal disease. Don't purchase, but wish more biosecurity requirements in insurance, are concerned about the diseases and risk

# Characteristics of the classes

| Covariates (inactive)                                   | Non-buyers | Strong buyers | Weak buyers | Concerned non-buyers | Overall |
|---|------------|---------------|-------------|----------------------|---------|
| Poultry   | 29.2%      | 25.4%         | 27.6%       | 25.2%                | 27.5%   |
| Farm had disease  | 13.7%      | 20.0%         | 17.7%       | 27.6%                | 17.8%   |
| Young respondent  | 2.4%       | 5.9%          | 4.6%        | 6.0%                 | 4.1%    |
| Senior respondent                                       | 47.7%      | 47.9%         | 42.2%       | 46.3%                | 46.6%   |
| Large farm  | 27.3%      | 33.7%         | 26.3%       | 34.7%                | 29.6%   |
| Small farm  | 23.6%      | 20.0%         | 21.4%       | 22.2%                | 22.3%   |
| High biosecurity  | 44.7%      | 49.9%         | 43.9%       | 49.8%                | 46.4%   |
| Low biosecurity   | 5.3%       | 3.7%          | 1.1%        | 5.2%                 | 4.3%    |
| University education                                    | 20.2%      | 21.9%         | 23.0%       | 25.6%                | 21.9%   |
| Agricultural education                                  | 61.1%      | 59.7%         | 63.1%       | 58.3%                | 60.7%   |
| Primary education                                       | 15.4%      | 11.4%         | 10.8%       | 9.8%                 | 13.0%   |
| Female  | 17.4%      | 13.4%         | 18.7%       | 15.7%                | 16.6%   |
| 3 or 4 "Would not buy"-responses                        | 83.0%      | 0.1%          | 13.6%       | 33.8%                | 47.1%   |
| Average current annual animal disease insurance payment | 583€       | 643€          | 520€        | 764€                 |         |

# WTP – willingness to pay (€) adjusted for average farm size

|                             | Class 2       |           |         |            | Class 3       |           |         |            |
|-----------------------------|---------------|-----------|---------|------------|---------------|-----------|---------|------------|
| Insurance                   | Finishing pig | Other pig | Broiler | Laying hen | Finishing pig | Other pig | Broiler | Laying hen |
| Compensated damages, low    |               |           |         |            |               |           |         |            |
| Deductible 0%               | 615           | 833       | 5 291   | 1 015      | 603           | 217       | 2 254   | 432        |
| Deductible 10%              | 457           | 619       | 3 934   | 755        | 482           | 174       | 1 800   | 345        |
| Deductible 30%              | 142           | 192       | 1 220   | 234        | 239           | 86        | 891     | 171        |
| Compensated damages, medium |               |           |         |            |               |           |         |            |
| Deductible 0%               | 858           | 1 162     | 7 381   | 1 416      | 760           | 274       | 2 841   | 545        |
| Deductible 10%              | 700           | 948       | 6 024   | 1 156      | 639           | 230       | 2 386   | 458        |
| Deductible 30%              | 385           | 521       | 3 310   | 635        | 396           | 143       | 1 478   | 283        |
| Compensated damages high    |               |           |         |            |               |           |         |            |
| Deductible 0%               | 1 052         | 1 424     | 9 048   | 1 736      | 608           | 219       | 2 271   | 436        |
| Deductible 10%              | 894           | 1 210     | 7 691   | 1 475      | 486           | 175       | 1 816   | 348        |
| Deductible 30%              | 579           | 783       | 4 977   | 955        | 243           | 88        | 908     | 174        |

# Conclusion

- Very limited demand
    - Not used to commercial insurances? Choice experiment too complicated?
    - No interest in general?
  - Distinct groups found, based on socio-economic backgrounds and features of the farm
- +
- Low deductible more interesting, but even 0% deductible did not arouse interest in all respondents
  - The ones who have willingness to pay, the level is close to current insurance costs
    - Animal disease insurance: pig farms 490 e/year, poultry 960 e/year
    - Animal production insurance: Pig farms 1080 e/year, poultry 1330 e/year

Thank you!